Checklist

Preliminary checklist of the freshwater Gastropoda of Brunei

Ting Hui Ng1,3,6, Rafhiah S. Kahar2,4 & David J. Marshall2,5

1Department of Biological Sciences, National University of Singapore, 14 Science Drive 4, Singapore 117543, Republic of Singapore;
2Faculty of Science, Universiti Brunei Darussalam, Jalan Tunong Link, BE 1410, Gadong, Brunei Darussalam;
3ng.tinghui@nus.edu.sg
4rafhiah.kahar@ubd.edu.bn
5david.marshall@ubd.edu.bn
6Corresponding author

Abstract

A preliminary checklist of freshwater Gastropoda from Brunei is reported.


Introduction

The freshwater gastropods of Borneo, and specifically, Brunei have not been properly documented to date. A preliminary checklist is presented herein based on records in literature and recent opportunistic collections done from March 2014 to January 2015. Records were included based on specific or general localities that included the mention of 'Brunei'. In the case of Martens (1908), the species were located within the area of "Labuan-Brunei", which includes part of present-day states of Sarawak and Sabah in Malaysia. Records were excluded if the references cited by Martens (1908) provided further details that the species were collected from Labuan (Malaysia) only. Specimens were deposited at the Zoological Reference Collection (ZRC) of the Lee Kong Chian Natural History Museum (formerly Raffles Museum of Biodiversity Research), National University of Singapore, and the Universiti Brunei Darussalam Museum (UBDM).

Systematic Part

Family Ampullariidae Gray, 1824

Genus Pomacea Perry, 1810

(Fig. 1)

Material examined. Brunei: 1 ex. (ZRC.MOL.5779), Pulau Bedukang (N04.975444, E115.060692), empty shell, washed up along edge of mangrove forest, coll. Ting Hui Ng. 9 December 2014. 2 ex. (UBDM.7.00001), Sengkurong B (N04.917241, E114.831747), lake, coll. Rafhiah S. Kahar, 22 January 2015. The species may be either of the two Pomacea species recorded from Brunei (see below), but cannot be determined based on the shell alone (see Hayes et al. 2012).

Pomacea maculata Perry, 1810

Previous record. Forestry Department (2010: 8) from Brunei.

Pomacea canaliculata (Lamarck, 1822)

Previous record. Forestry Department (2010: 8) from Brunei.

Family Buccinidae Rafinesque, 1815

Genus Clea H. Adams & A. Adams, 1855

Clea nigricans A. Adams, 1855

(Fig. 2)


To cite this publication:


© the Author(s) and this is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (CC-BY-NC-SA 4.0), which permits the copying, distribution and transmission of the work as long as the original source is cited.
Family **Lymnaeidae** Rafinesque, 1815

*Genus Radix* Montfort, 1810

*Radix rubiginosa* (Michelin, 1831)
(Fig. 3)

**Material examined.** Brunei: 6 ex. (ZRC.MOL.5780), Universiti Brunei Darussalam (N04.978297 E114.896322), drain along Jalan Universiti, outside mosque, coll. T.H. Ng, 10 December 2014.

Family **Neritidae** Rafinesque, 1815

*Genus Neritina* Lamarck, 1816

*Neritina coromandeliana* Sowerby, 1836

**Previous record.** Von Martens (1980: 264) from "Labuan-Brunei".

Fig. 1. *Pomacea* sp.: A, voucher specimen; B, collection locality, along edge of mangrove forest on Pulau Bedukang. Scale bar = 10 mm. Photographs by T.H. Ng.
Family Physidae Fitzinger, 1833

Genus Physa Draparnaud, 1801

Physa acuta Draparnaud, 1805
(Fig. 4)

Material examined. Brunei: 5 ex. (ZRC.MOL.5782), Universiti Brunei Darussalam (N04.978297, E114.896322), drain along Jalan Universiti, outside mosque, coll. T.H. Ng, 10 December 2014.

Family Planorbidae Rafinesque, 1815

Genus Gyraulus Charpentier, 1837

Gyraulus sp.
(Fig. 5)


Family Thiariidae Gill, 1871

Genus Melanoides Olivier, 1804

Melanoides tuberculata (O.F. Müller, 1774)
(Fig. 6)


Family Viviparidae Gray, 1847

Genus Filopaludina Habe, 1964

Filopaludina sumatrensis (Dunker, 1852)
(Fig. 7)

Previous record. Von Martens (1908: 263) from “Labuan-Brunei”.

A total of nine species from eight families have been recorded to date from Brunei, seven species of which were confirmed in this study. The *Pomacea* sp. collected in this study could not be verified as either *Pomacea maculata* or *Pomacea canaliculata*, while *Neritina coromandeliana* was not encountered during the opportunistic collections. Four species are new records for Brunei—*Melanoides tuberculata*, *Gyraulus* sp., *Physa acuta*, and *Radix rubiginosa*. This preliminary checklist includes three widely-introduced, globally-invasive species—the South American golden apple snails (*Pomacea canaliculata* and *Pomacea maculata*), and the North American *Physa acuta*. However, the current distribution and possible impacts of these introduced species, and the status of native species in Brunei remain unknown. Freshwater systems across extensive areas of Brunei are known to be acidic, deriving from runoff from acid sulphate geological formations and peat swamps (Grealish et al. 2008). A quarter of Brunei consists of peat swamp forests (Forestry Department 2010). These acidic conditions are largely unsuitable for freshwater molluscs, which generally prefer hard waters of relatively high pH (Dillon 2000). It is possible that some
natural freshwater systems in Brunei are not influenced by acidic inflows, and could harbour a more diverse malaco fauna, mirroring that of neighbouring Sarawak and Sabah (e.g., Solem 1964; Hill et al. 1997; Shabdin 2010; Hamli et al. 2013). Further investigation needs to be carried out to provide a comprehensive status of the freshwater gastropods of Brunei.

Acknowledgements

We would like to thank a reviewer for helpful comments that greatly improved the article. We would like to thank Andreia Salvador (Natural History Museum of London) for assistance in obtaining photographs of the types of *Clea nigricans* for reference purposes, Siong Kiat Tan (Lee Kong Chian Natural History Museum) for help with confirmation of species identities, and Shabdin Mohd. Long (University Malaysia Sarawak) for providing useful references. Ting Hui Ng would like to thank the International Consortium of Universities for the Study of Biodiversity and the Environment (iCUBE) and Universiti Brunei Darussalam (UBD) for providing a travel grant and sponsorship for attendance of the Gastropod Thermal Biology and Climate Change workshop at the UBD.

References


